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Installation Guide & User's Manual

3½" Removable SyQuest Drives

660 AV SCSI ID: 3

AFFORDABLE
MDS
Marlow Data Systems
PERFORMANCE

MDS Drive Features

This MDS drive is a 105 or 270 Megabyte, 3.5 inch, removable media storage system specifically designed for use with a Macintosh® computer. This drive features a SyQuest mechanism which is rated at 14.5 ms or 13.5 ms average seek time (respectively) and 100,000 hours mean time before failure. The drive unit is capable of operating in environments where altitude is between 1000 and 10,000 feet; temperature is between 41° F and 122° F; and humidity is less than 90% non-condensing.

Some specific advantages of the MDS drive:

Hardware

- **Pushbutton SCSI ID Selector**
  SCSI ID may be changed without special tools.
- **Dual 50 Pin SCSI Connectors**
  Drive may be placed at any location in SCSI chain.
- **External Terminator**
  Termination may be changed without disassembling the unit.
- **Low Power Consumption**
  Requires no fan resulting in less noise and lower operating costs.
- **Detachable Power Cord**
  Replacement cords available in various lengths.
- **Read/Write and Cartridge-In-Use Status Lamps**
  Give immediate visual indication of drive status.

Software

- **Low-Level Format**
  Checks integrity of cartridge and eliminates bad areas.
- **User-Selectable Interleave**
  Allows data to be accessed at fastest possible rate.
- **User-Defined Partitions**
  Creates separate and distinct volumes on a single cartridge.
- **Initializes Partitions**
  In either normal Macintosh or A/UX formats.
- **Volume Password Protection**
  Secures data from unauthorized access.

Notice

The MDS drive generates and uses radio frequency energy and may cause interference to radio and television reception. It has been tested and found to comply with the limits for a Class "B" computing device in accordance with the specifications in Subpart "J" of Part 15 of the FCC rules. These specifications are designed to provide reasonable protection against such interference when operated in a residential installation. However, there is no guarantee that interference will not occur at a particular location.

If the MDS drive does cause radio or television interference, you may try to eliminate the interference by doing one or more of the following: Reorient the antenna; Move the drive away from the antenna; Plug the drive into a different electrical outlet so that the drive and receiver are on separate electrical circuits.

You may also wish to order the booklet *How to Identify and Resolve Radio/TV Interference Problems*, available from the US Government Printing Office, Washington, DC 20402, Stock Number 004-000-00345-4.

Unpacking and Placement of the MDS Drive

As you are unpacking the MDS drive, please make an effort to save the box in which the drive unit and accessories were packaged. This box is indispensable if you ever need to transport the drive or if you need to ship the drive for service at some point in the future.

Package Contents

- MDS Drive Unit
- 105 or 270 Megabyte Cartridge (in some models)
- SCSI Cable
- SCSI Terminator
- Power Cord
- Installation & User's Manual
- Formatting Software and Manual

The MDS drive should be placed on a clean, flat, stable surface. Take care to insure that there are no papers or other loose material under or around the drive unit.

Before connecting any cables please make sure that the drive unit, the Macintosh, and any other devices connected to the SCSI chain are powered off. The MDS drive should not be plugged into an electrical outlet until it has been cabled to your Macintosh. This will protect both your MDS drive and your other devices from electrical problems while connecting cables.

What is SCSI?

The MDS drive is a SCSI device. SCSI stands for Small Computer Systems Interface. There are three things you should know about SCSI in order to properly connect and use this drive:

SCSI is a "bus" type of communications connection. Devices are chained from one to the other in a string. Each device in the chain is analogous to a freight car on a train. Just as with a train, SCSI devices cannot be connected in a loop.

All the messages headed to and from the Macintosh are sent across the entire length of the chain. It is up to each device to decide whether or not to answer a message based upon the address of the device. This is similar to a party line telephone. When a message is sent down the line, each user listens for a particular ring (address) and only picks up the phone if the message is for him.

The devices at either end of the chain must be terminated. Termination is the elimination of the electrical signals that make up a message. Without termination, a message would "bounce" off the end of the chain and come back again. A device in the middle of the chain would then get the message twice and confuse all the other devices by replying twice.

Cabling and SCSI Termination

Where you connect your MDS drive in the SCSI chain will in part be determined by what other devices you have already connected. Please locate the appropriate text on the following page describing your current setup and follow the instructions for connecting the drive and setting the termination.

If you have no other external SCSI devices connected to your Macintosh:

1. Connect the included cable to your Macintosh's SCSI port. The Mac's SCSI port is signified by the following icon:
2. Attach the other end of the SCSI cable to either port on the back of the MDS drive. (The two ports on the MDS drive are functionally identical.)
3. Attach the terminator* to the unused port on the MDS drive.
4. Proceed to the section on selecting a SCSI ID number.

If you have other external SCSI devices connected to your Macintosh:

Before going any further make sure that you have purchased a SCSI chaining cable. This cable, which is available separately, has 50 pin connectors on both ends and is designed to go between two SCSI devices. The cable included with the MDS drive is designed to go between the Mac's 25 pin SCSI port and the MDS's 50 pin SCSI port.

You must determine if you wish to install the MDS drive within the chain or at the end of the chain. Some questions that will help you to decide: Does the last device on the chain have a second SCSI port from which to chain additional devices? Does the last device have a terminator that can be easily turned on and off without disassembling the unit?

If the last device does not have a second SCSI port for chaining, or has terminator(s) which are internal or otherwise not easily removable, you must keep this device as the last in the chain. Follow the directions for installing the MDS drive in the middle of the chain. Otherwise, you have the option of installing the MDS drive in the middle of the chain, or last in the chain.

To attach the MDS drive in the middle of the SCSI chain:

1. Separate the chain at the point in which you would like to install the MDS Drive.
2. Connect one end of the disconnected SCSI cable to either port on the back of the MDS drive. (The two ports on the MDS drive are functionally identical.)
3. Connect the SCSI chaining cable (purchased separately) from the unused port of the MDS drive to the next device in the chain.
4. Proceed to the section on selecting a SCSI ID number.

To attach the MDS drive at the end of the SCSI chain:

1. Follow the manufacturer's instructions to disconnect or disable the terminator(s) on the last drive in the chain.
2. Connect the SCSI chaining cable (purchased separately) to the unused port of the last device.
3. Attach the other side of the chaining cable to either port on the back of the MDS drive. (The two ports on the MDS drive are functionally identical.)
4. Attach the terminator* to the unused port on the MDS drive.
5. Proceed to the section on selecting a SCSI ID number.

Special note to Macintosh IIfx owners. The terminator included with the MDS drive will not work properly with the Mac IIfx. Apple has created a special terminator specifically for use with the Mac IIfx. This terminator was included with your Macintosh and has a* ***black* *casing. Please use this terminator in place of the terminator that was included with the MDS drive.*

Selecting a SCSI ID Number

You must select a SCSI address for your MDS drive. This address may be any number between 0 and 6, however, this number must be different from the addresses of all other SCSI devices connected to your Macintosh. Note that hard disk drives (but not floppy disk drives) installed internally within the Mac are part of the SCSI chain and have their own ID numbers.

The Macintosh will attempt to use the System Folder on the device with the lowest SCSI ID. If there is no working System Folder on this device, the Mac will attempt to use the device with the next highest number. For this reason internal hard drives are often, but not always, given IDs of 0 or 1.

Check all the devices on the SCSI chain† and set the MDS drive's address number different from those already in use. The SCSI ID numbers may be in any order on the chain; they do not need to follow sequentially. For example, device 4 may attach to device 2 which may attach to device 5, etc. Since the only valid ID numbers are 0 through 6, only seven SCSI units (and a single Macintosh) may be chained together.

To set the ID of the MDS drive, locate the drive ID selector on the back of the unit. It is a small digital counter with push buttons above and below the displayed digit. Push the upper button to **decrease** the ID number, and push the lower button to **increase** the ID number.

Powering Up

Once the MDS drive has been properly attached to the SCSI chain and the SCSI ID has been set, you may connect the power cable to a suitable power source. MDS strongly recommends using a power surge suppresser with a 15 Amp fuse. Surge suppressers prevent high voltage "spikes" from entering into your computer equipment and increase the life of your investment.

The power switch for the MDS drive is located on the front of the unit. It is the oval button on the lower right corner. Simply press the button to turn the drive on or off. The light directly above the power button should be green when the drive is turned on.

You must switch on the MDS drive before or at the same time as your Macintosh. (Connecting your Mac's power cord to either of the auxiliary power connectors on the back of the MDS drive will force this to occur.) If the Mac is booted without power to the MDS drive, the Mac and drive will be unable to communicate until they are both powered off and back on again.

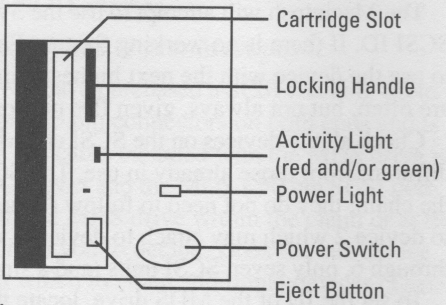
When powered on, the drive motor will not spin and the green activity light in the center of the unit (directly beneath the locking handle) will not remain steadily lit until a cartridge has been inserted. A flashing red activity light indicates that the cartridge is in the middle of a Read/Write process. **Never eject a cartridge or power off the MDS drive if the red activity light is on. Doing so may result in the loss of data and/or damage the cartridge platter.**

†A simple way to find out what SCSI ID numbers are already occupied is to launch the HDT Primer™ and look at the opening screen. The software will list all your current SCSI devices and you can use any ID that isn't taken.

Inserting and Removing Cartridges

Inserting cartridges is a two-step process:

1. Carefully examine the cartridge for an arrow designating the side to be inserted. Insert the cartridge into the drive unit arrow side first until the drive grasps it. As the cartridge is inserted, the drive will extend the locking handle beside the slot. If you encounter strong resistance as you are inserting or the drive refuses to accept the cartridge, remove the cartridge and try again. **Do not use excessive force** to insert the cartridge into the drive unit.
2. Slide the locking handle upward until it is flush with the front of the drive case. The drive motor will spin up to speed and the green activity light will be illuminated.



Removing cartridges is a five-step process:

1. Unmount the cartridge by removing the icons for all of the cartridge's partitions from the desktop. This can be accomplished by selecting the "Shut Down" command from the menu bar, or dragging the individual volume icons into the trash. If you select "Eject Disk" from the menu bar, the MDS drive icon will not be removed from the desktop and the cartridge will not be ejected. The MDS drive is a manual eject mechanism and does not work with this command.
2. Press the eject button below the lock handle to stop the drive motor. The lock handle above the eject button should now protrude above the surface of the drive.
3. **Wait for the drive unit to stop turning and the cartridge activity light to go off.** It is possible to press the eject button and have the drive continue to operate. This is usually caused by forgetting to unmount a volume associated with the cartridge or having System 7 filesharing enabled. If the drive does not come to a halt or the activity light remains lit, relock the cartridge in place by sliding the locking handle upward and return to step 1. **Attempting to release the cartridge before the drive unit stops may damage the drive and/or cartridge.**
4. Slide the locking handle downward until it is flush with the front of the drive case. The cartridge will be released from the unit.
5. Remove the cartridge by pulling it gently from the slot.

Using Cartridges

The MDS270 drive can read and write both 105M and 270M SyQuest cartridges. However, it will not format 105M cartridges. The MDS105 will only read from and write to 105M SyQuest cartridges.

A cartridge may be manually write-protected by turning the colored plastic dial located on the underside a quarter turn. A write-protected cartridge can be easily recognized by the colored band that appears on the exposed edge. To unprotect the cartridge, simple turn the dial to its unlocked position.

The first time a cartridge is inserted, before it has been formatted, it will not appear on the Macintosh desktop, nor will the Mac ask if you wish to format the cartridge. Cartridges used with the MDS drive must be formatted with *Hard Disk Toolkit*™ utility software. Follow the instructions in the formatting software manual to format new cartridges. Of course, once the cartridge has been formatted, the Macintosh will recognize it as a readable disk as soon as it is inserted. For information on formatting cartridges, please refer to the *Hard Disk Toolkit*™ software manual.

Troubleshooting

Below are some common problems and suggestions for their solution.

The MDS drive will not power up.

Is the Power Switch in the on position? Is the green activity light directly above the power switch on?

Is power being supplied through the electrical outlet? Attach another device to check.

Is the power cord firmly attached to the MDS drive?

The lights on the front of the MDS drive are off.

Is there a cartridge in the unit? The green activity light in the center indicates a cartridge is ready for use.

Is the Macintosh communicating with the MDS drive? A flashing red activity light in the center indicates a Read/Write operation is in progress.

The MDS drive will not accept a cartridge.

Is there a cartridge already in the unit?

Is the locking handle in the upward position and flush with the front of the case?

Are you inserting the cartridge with the arrow pointing in towards the slot of the MDS drive?

The MDS drive accepts the cartridge but nothing shows up on the desktop.

Has the disk been formatted as a Macintosh disk? Unformatted disks will not appear on the desktop.

Are all devices on the SCSI chain working properly? Some devices must be powered on or the entire chain will not work. Try rebooting the Mac with all the devices in the chain switched on.

Is the last device on the SCSI chain terminated? Make sure that the first and last SCSI devices are terminated either internally or externally.

If you experience any problem that you are unable to resolve with the above tips, please call the MDS Technical Support line at (800) 800-0015. Technical Support hours are 9:00 AM to 7:30 PM EDT Monday through Friday.

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